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OIL AND GAS DEVELOPMENTS
IN
PENNSYLVANIA
IN
1955

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CHAS. R. FETTKE AND WM. S. LYTLE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF INTERNAL AFFAIRS
GENEVIEVE BLATT, *Secretary*
TOPOGRAPHIC AND GEOLOGIC SURVEY
CARLYLE GRAY, *State Geologist*
APRIL 1956

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OIL AND GAS DEVELOPMENTS IN PENNSYLVANIA IN 1955

By

Chas. R. Fettke[1] and Wm. S. Lytle[2]

ABSTRACT

The Greenlick gas pool in the Leidy field in northeastern Clinton and adjacent southeastern Potter County was the outstanding discovery made in Pennsylvania during 1955. Ten gas wells were completed in it by the end of the year, with average initial open-flow capacities of 50,800 thousand cubic feet each per day. The initial reservoir pressure was 4,240 p.s.i. The Oriskany sandstone of Lower Devonian age is the producing sand. The developed acreage at the end of the year included about 2,600 acres. In the Oriskany sand gas territory of north-central Pennsylvania, the development of the Benezette-Driftwood gas field in southeastern Elk County was essentially brought to completion. The developed area now includes about 30,000 acres. The 1955 production amounted to 38,414,000 thousand cubic feet, making the total production of the field 180,414,000 thousand cubic feet at the end of 1955. A cherty facies of the Onondaga formation of Middle Devonian age attracted considerable attention as a potential source of gas in western Clearfield and adjacent parts of southeastern Jefferson and eastern Indiana counties during the year. One hundred and fifteen deep wells (Middle Devonian or deeper) were completed in Pennsylvania in 1955. Sixty-seven of these were gas wells, 30 were dry holes, and 18 were drilled for gas storage.

The marked decline in drilling activity in the shallow-sand territory of western Pennsylvania (Upper Devonian or higher), which occurred in 1954, continued into 1955. In all 667 shallow-sand wells were completed. Of these, 214 were gas wells, 17 were oil wells, and 78 were dry holes. Three were drilled for gas storage and 355 were drilled in connection with secondary-recovery oil operations. Oil production decreased from 9,123,000 barrels in 1954 to 8,505,000 barrels in 1955 and gas production from 158,050,000 thousand cubic feet to 123,604,000 thousand cubic feet.

INTRODUCTION

This report covers oil and gas developments in Pennsylvania during 1955. The summarized records of deep wells (Middle Devonian or deeper) assembled in Table 1 are intended to supplement those in Table 1, Bulletin M 31, Fourth Series, of the Pennsylvania Topographic and Geologic Survey and those in Table 1, Bulletin M 39. Bulletin M 31 includes those deep wells completed prior to 1950 and Bulletin M 39, those drilled between 1950 and 1955. Shallow-sand (Upper Devonian or higher) activities during the latter period are described in Progress Reports 135, 139, 143, 144, and 147 of the Pennsylvania Topographic and Geologic Survey.

ACKNOWLEDGMENTS

In connection with the preparation of this review, the writers acknowledge the cooperation of G. G. Bauer and Paul W. Garrett, Jr. Virginia Fairall, of the Survey Staff, did the drafting and assisted with the compiling of the data.

DEEP-SAND DEVELOPMENTS

Summarized records of the deep wells completed in north-central and western Pennsylvania are assembled in table 1. The locations of the wells are shown on the map in plate 1 and the stratigraphic positions of the formations tested in plate 2. Of the

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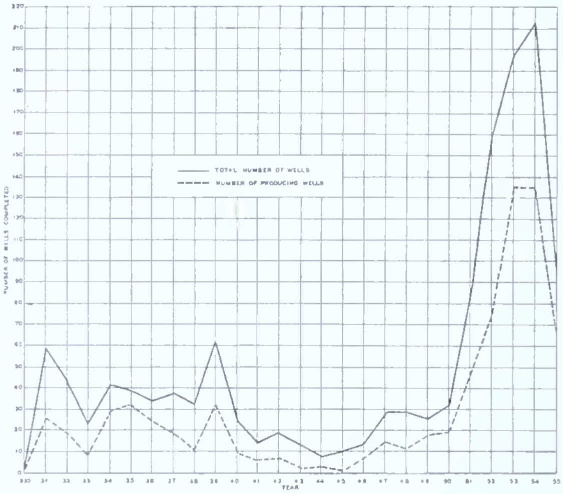
113 wells drilled to the Oriskany or deeper in 1955, sixty-seven were gas wells, 18 were drilled for gas storage, and 28 were dry holes. Another two were abandoned after drilling through the Tully limestone at the top of the Middle Devonian series. The number of deep wells completed was only one-half the number drilled in 1954 due largely to the tapering off of activity in the Benezette-Driftwood field. The annual rate of deep-sand exploration and development since the discovery of the Tioga field in 1930, the first deep-sand field to be opened in Pennsylvania, is shown in figure 1.



ANNUAL RATE OF DEEP SAND EXPLORATION AND DEVELOPMENT

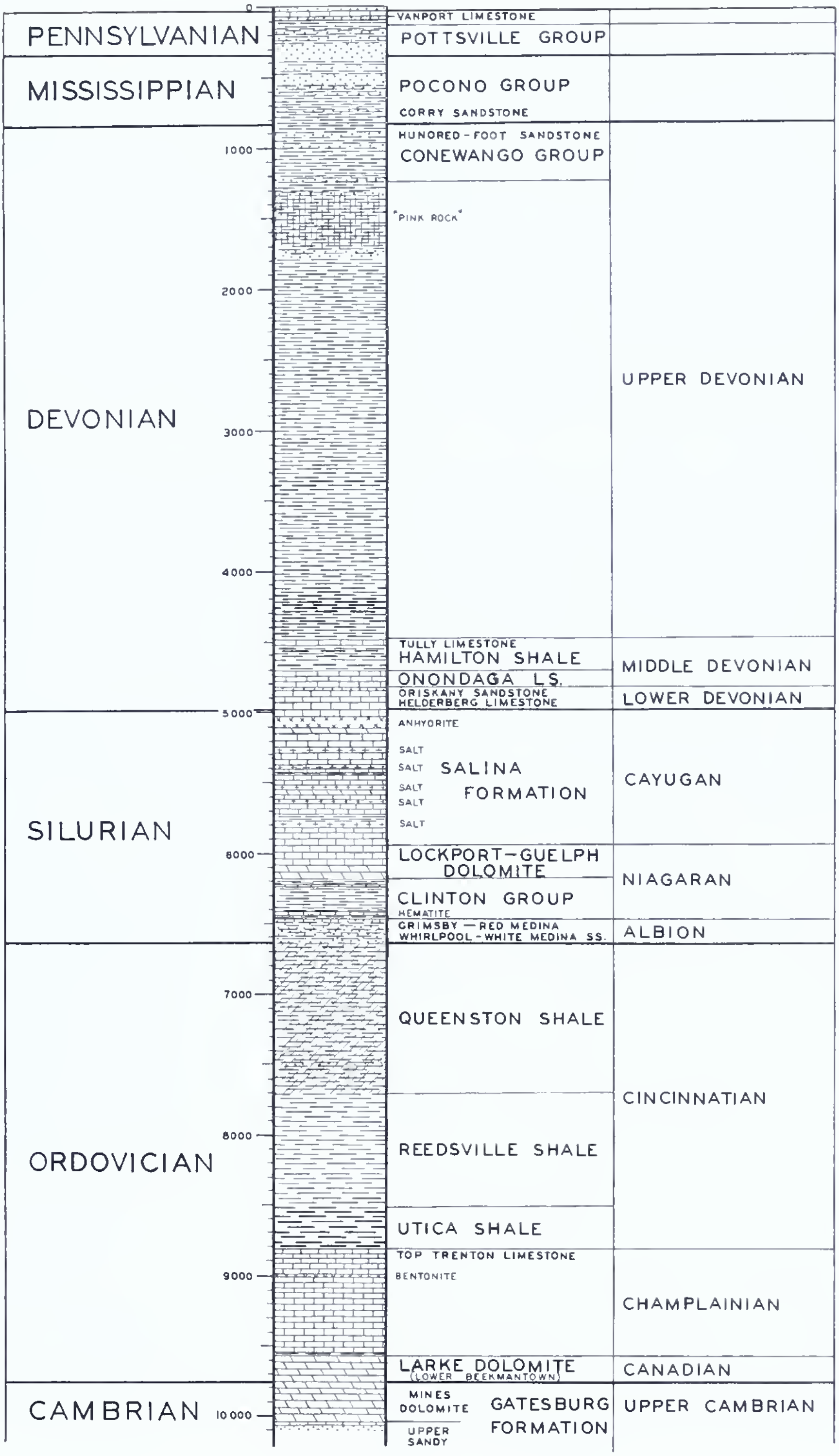
Figure 1

In the Oriskany sand gas territory of north-central Pennsylvania the development of the Benezette-Driftwood gas field in southeastern Elk County was essentially brought to completion. Nineteen additional producing wells with average initial open-flow capacities of 2,230 thousand cubic feet of gas per day per well and three dry holes were completed in it during 1955. The developed area now includes about 30,000 acres. The 1955 production amounted to 38,414,000 thousand cubic feet, making the total production of the field 180,414,000 thousand cubic feet at the end of 1955.

The Greenlick pool in the Leidy field in northeastern Clinton and adjacent southeastern Potter County was the outstanding discovery of 1955. Ten gas wells were completed in it by the end of the year with average initial open-flow capacities of 50,800 thousand cubic feet each per day. The initial reservoir pressure was 4,240 pounds per square inch. The largest well had an estimated initial open-flow capacity of 124,000 thousand cubic feet per day. The developed area at the end of 1955 included about 2,600 acres. The pool is located on the southwest plunging nose of a dome along the axis of the Wellsboro anticline. An oblique fault along its northwest side separates it from the main Leidy pool. The latter is located immediately to the southwest and overlaps it slightly in en echelon arrangement.

The Leidy pool, opened early in 1950, produced only 998,610 thousand cubic feet of gas in 1955; the Tamarack pool, 299,500 thousand cubic feet; and the Downs pool, 335,000 thousand cubic feet.

A cherty facies of the Onondaga formation of Middle Devonian age, which overlies the Oriskany sandstone, attracted considerable attention as a potential source of gas in western Clearfield and adjacent parts of southeastern Jefferson and eastern Indiana counties during 1955. Apparently the chert is fractured sufficiently, locally, to act as a reservoir for the accumulation of natural gas. The discovery was made



COLUMNAR SECTION
WESTERN PENNSYLVANIA
OBTAINED IN JESSIE G. HOCKENBERRY WELL NO. 1
MANUFACTURERS LIGHT & HEAT COMPANY
MERCER TOWNSHIP, BUTLER COUNTY, PA

CHAS R FETTKE 1953

Plate 2

late in 1953 when an initial open-flow capacity of 700 thousand cubic feet of gas per day was obtained by shooting the Onondaga-Oriskany-Helderberg zone in the Alice Irwin No. 13 well of F. C. Deemer in western Clearfield County. When the zone was drilled originally with cable tools practically no gas was observed coming from it. Almost no decline in flow occurred during the first year that the well was in operation. The original reservoir pressure was approximately 3900 pounds per square inch. There was some question at the time whether the gas was coming from fractured Onondaga chert, Oriskany sandstone, or Helderberg limestone, but recent developments indicate that it is probably fractured Onondaga chert that is the source. Only about six feet of fine- to medium-grained quartzitic sandstone are present at the Oriskany horizon. Three additional wells with average initial open-flow capacities of 3,000 thousand cubic feet of gas per day per well after hydrafracing were completed in the pool during 1955. Hydrafracing appears to be more effective than shooting. The pool is located at the southwestern end of the Pine dome along the Chestnut Ridge anticline in western Clearfield County.

One Onondaga chert, one dual zone Onondaga chert-Oriskany sandstone, and two Oriskany sandstone wells were completed in a new gas field, the Rockton, on the northwest flank of the Chestnut Ridge anticline, eight miles northeast of the Deemer Pool in Clearfield County during 1955. The Onondaga chert well had an initial open-flow capacity of 515 thousand cubic feet of gas per day and the dual zone well, 2,000 thousand cubic feet after hydrafracing. The two Oriskany sandstone wells had initial open-flow capacities of 3,500 and 8,000 thousand cubic feet, respectively.

Three wells were completed in the Reed pool, discovered in 1955, three miles southwest of the Deemer pool along the trend of the Chestnut Ridge anticline. Average initial open-flow capacities in the Onondaga chert were 1,600 thousand cubic feet per day per well after hydrafracing. Another well, No. 80, plate 1, six and one-half miles southwest of the Deemer pool in the northeast corner of Indiana County had an initial open-flow capacity of 431 thousand cubic feet after hydrafracing the Onondaga chert.

An additional well was completed in the Nolo pool in east-central Indiana County with an initial open-flow capacity of 380 thousand cubic feet of gas per day after hydrafracing the Onondaga chert and one with an initial open-flow capacity of 200 thousand cubic feet after hydrafracing on the Dias Ridge dome, four miles southwest of the Nolo pool along the axis of the Nolo anticline, No. 83, plate 1.

The Onondaga chert developments outlined above extend over a belt nearly 40 miles long as shown in plate 1. Sixty miles farther southwest along the same trend the Onondaga chert was the principal producing zone in the Summit field of southern Fayette County. The Onondaga chert has also been the main producing zone in the Terra Alta field in northern West Virginia and the Mt. Lake Park field in western Maryland.

The development of the extension to the Meade pool, discovered in 1954, rapidly degenerated into a "town-lot" type of exploitation during 1955. Gas was discovered originally in the Oriskany sandstone in this part of north-central Erie County early in 1946. About 200 acres were developed. After about 225,000 thousand cubic feet of gas had been produced in 1948 the then drilled wells were watered-out. The pool stood idle until 1954 when an outpost well extended its limits to the south and southwest. Pipeline facilities to the pool were not restored until late in 1955. Twenty-four gas wells and 12 dry holes were completed in an area of approximately 1,000

TABLE 2. SHALLOW-SAND WELL COMPLETIONS IN PENNSYLVANIA IN 1955*

	TOTAL		GAS			OIL			DRY	
County	Number of Wells	Average Total Depth (Feet)	Number of Wells	Average Initial Open-flow (M. Cu. Ft. per Day)	Average Total Depth (Feet)	Number of Wells	Average Initial Production (Barrels per day)	Average Total Depth (Feet)	Number of Wells	Average Total Depth (Feet)
Allegheny	12	2906	7	85	2880	0	----	----	5	2942
Armstrong	63	3074	61	288	3102	0	----	----	2	2233
Butler	24	2097	12	25	2287	6	1.5	1416	6	2400
Clarion	10	2537	10	116	2537	0	----	----	0	----
Clearfield	2	2553	1	50	3605	0	----	----	1	1500
Crawford	1	2003	0	--	----	0	----	----	1	2003
Elk	9	1656	3	72	1811	0	----	----	6	1579
Fayette	2	2647	1	12	2678	0	----	----	1	2615
Forest	24	1238	9	113	1545	7	4	711	8	1179
Greene	5	2066	2	135	2187	1	2	747	2	2604
Indiana	32	3030	24	374	2908	1	5	1348	7	3690
Jefferson	44	2999	33	200	3050	0	----	----	11	2844
Lycoming	1	4130	0	--	----	0	----	----	1	4130
McKean	14	2319	7	49	2184	0	----	----	7	2454
Mercer	6	690	5	112	700	1	1	639	0	----
Potter	6	822	5	309	683	0	----	----	1	1515
Venango	1	908	1	38	908	0	----	----	0	----
Washington	14	2289	5	225	1835	1	35	2757	8	2515
Westmoreland	39	3307	28	477	3182	0	----	----	11	3624
Total	309	2615	214	204	2729	17	4.7	1198	78	2612

*Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.

acres during 1955. The 24 gas wells had average initial open-flow capacities of 4,200 thousand cubic feet per day per well. The largest reported was 11,710 thousand cubic feet.

A second unsuccessful Oriskany test was completed along the Shade Mountain anticline of the closely folded Appalachian Mountains west of the anthracite coal fields in Northumberland County, No. 86, plate 1. An Oriskany test located near the western end of the Wilmot anticline in north-central Sullivan County, No. 110, plate 1, northwest of the anthracite coal fields, also proved dry.

One unsuccessful Albion (Medina) test was completed in each of Butler, Crawford, Erie, and Warren counties during 1955. See Nos. 1, 25, 79, and 114 of plate 1 and table 1, respectively.

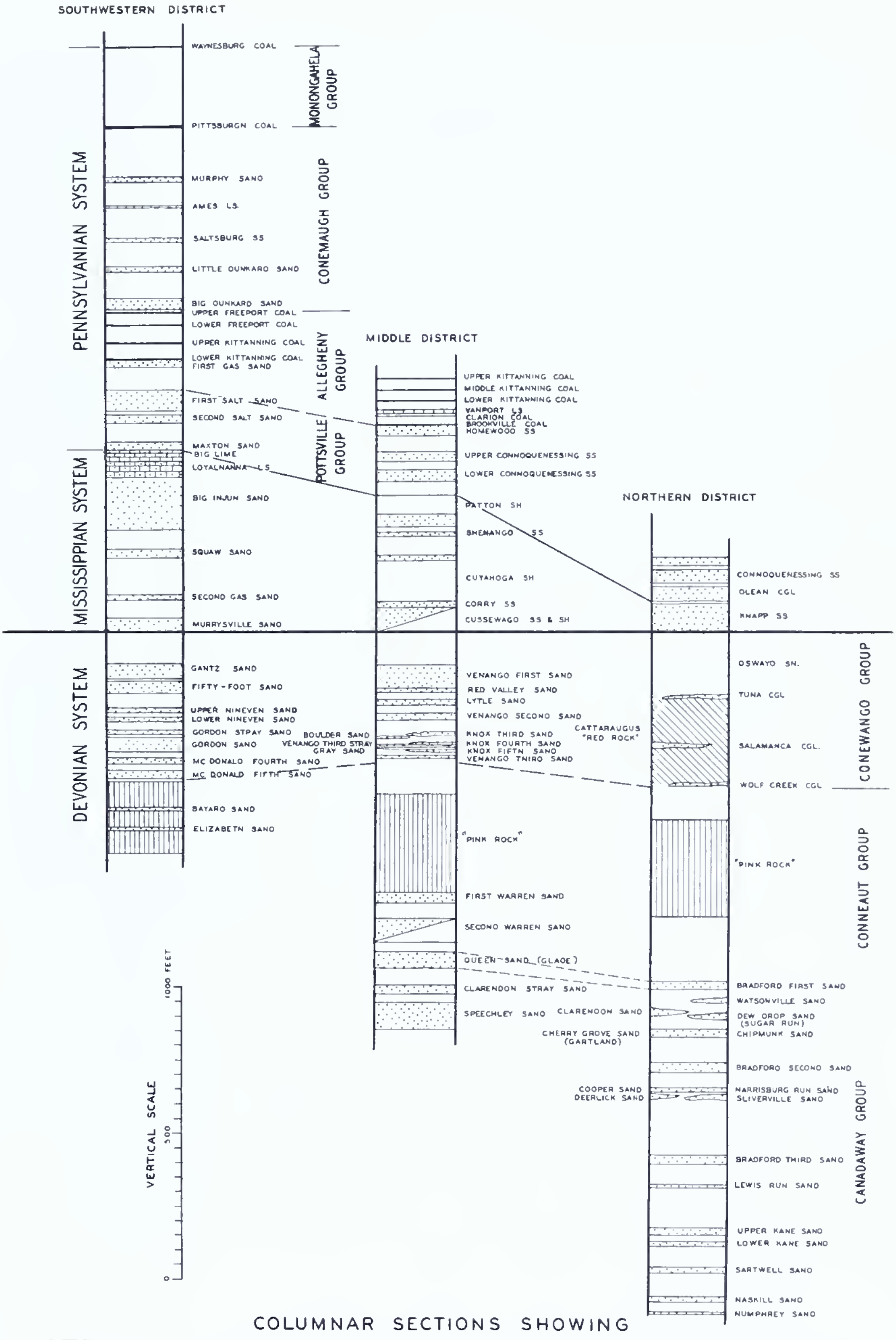
The Reno Solomon well of Godfrey L. Cabot, Inc., No. 113, plate 1, in southeastern Union County, a Cambro-Ordovician test, was also unsuccessful. The well is located along the axis of the Kishacoquillas anticline in the closely folded Appalachians west of the anthracite coal fields. It started in the Tuscarora sandstone of Lower Silurian age and was bottomed in dolomite, probably Lower Ordovician in age, at a total depth of 8,002 feet.

SHALLOW-SAND DEVELOPMENTS

Shallow-sand well completions in western Pennsylvania, exclusive of those drilled in connection with underground gas storage and secondary-recovery oil operations, are shown in table 2. During 1955, 309 such wells were drilled, of which 69 percent were gas wells, 6 percent were oil wells, and 25 percent were dry holes.

TABLE 3. SHALLOW-SAND WELLS DEEPENED IN 1955

	TOTAL		GAS			DRY	
County	Number of Wells	Average Amount Deepened (Feet)	Number of Wells	Average Initial Open-Flow (M. Cu. Ft. per day)	Average Amount Deepened (Feet)	Number of Wells	Average Amount Deepened (Feet)
Allegheny	2	270	2	161	270	0	----
Armstrong	10	1495	10	224	1495	0	----
Butler	1	407	1	20	407	0	----
Fayette	1	2000	1	65	2000	0	----
Greene	2	1460	1	47	900	1	2020
Jefferson	4	1903	2	291	2039	2	1767
Washington	1	810	1	450	810	0	----
Total	21	1392	18	207	1316	3	1851



COLUMNAR SECTIONS SHOWING

STRATIGRAPHIC POSITIONS OF OIL AND GAS SANDS

OF WESTERN PENNSYLVANIA

CHAS.R. FETTKE 1953

Figure 2

The 214 new gas wells had a total initial open-flow capacity of 53,468 thousand cubic feet per day, as compared with the total initial open-flow capacity of 15,504 thousand cubic feet of the 204 gas wells completed in 1954. The marked increase in average initial open-flow of the gas wells in 1955 was due to the introduction of hydraulic fracturing. The figures given for 1955 are the ones obtained after hydraulic fracturing where this method of completing the wells was used. Of the 214 new gas wells completed in 1955, eighty-six were hydrafraced. The combined initial open flows of the 86 wells was 38,600 thousand cubic feet after hydrafracing as compared with 2,645 thousand cubic feet before. The 17 new oil wells completed in 1955 had a total initial production of 80 barrels per day, as compared with the total initial production of 106 barrels of the 41 oil wells completed in 1954. The results obtained in 1955 by deepening 21 shallow-sand wells are shown in table 3. The stratigraphic positions of the Upper Devonian and higher oil and gas sands are shown in figure 2.

GAS

Three new shallow-sand gas pools of minor importance were discovered in 1955, as follows: one in Jackson Township, Cambria County, one in Warsaw Township, Jefferson County, and one in Hamlin Township, McKean County. The greatest activity in the shallow-sand gas belt of western Pennsylvania occurred in Armstrong County where 61 new gas wells were completed, 38 of which were hydrafaced. Hydraulic fracturing raised the combined initial open-flow capacities of the 38 wells from 1,104 thousand cubic feet per day to 15,925 thousand cubic feet, or over fourteen times. Three wells were drilled for underground storage of gas in Greene County.

OIL

The average daily oil production of Pennsylvania in 1955 is estimated at 23,300 barrels, as compared with 24,995 barrels in 1954, a decline of 6.8 percent. Crude oil prices during the course of the year improved as follows:

Table 4. Price of Oil per Barrel 1955

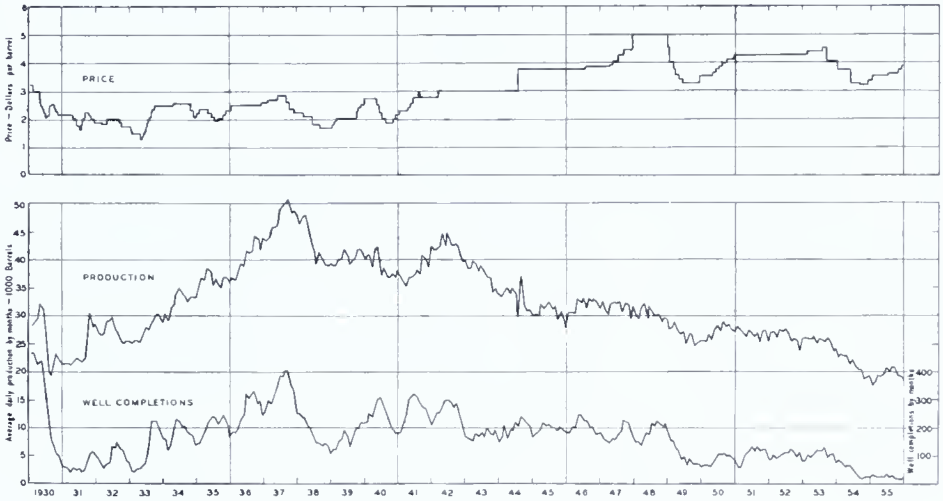
Date	Northern or Bradford District	Middle or Venango District	Southwestern District
January 1	$3.35	$3.25	$2.93
January 21	3.50	3.37	3.08
July 11	3.60	3.47	3.18
November 1	3.75	3.62	3.33
December 1	3.85	3.72	3.43

In the Bradford oil field, which includes the Bradford, Guffey, and Burning Well pools, 317 new wells were drilled in connection with secondary-recovery operations, as compared with 545 in 1954, a decrease of 42 percent. Oil production in this field, 86 percent of whose area is in Pennsylvania, decreased from a daily average of 21,217 barrels in 1954 to 19,646 barrels in 1955, or 7 percent. Of the new wells, 285 were located in the Pennsylvania part of the field, and this part contributed 17,900 barrels of the daily average production. This represented 77 percent of the total production of the State in 1954. The relations between crude oil prices, production, and drilling activity in the Bradford field are shown in figure 3.

In Potter County, one oil well and two water input wells were completed in connection with water-flooding operations. Forty wells were completed in the Kane-Clarendon area of southwestern McKean County and eastern Warren County. In the Venango district of northern Venango and adjacent parts of Forest and Warren counties, 27 wells were drilled in 1955, as compared with 33 in 1954, in connection with secondary-recovery oil operations. Of these, 11 were air- or gas-intake wells, 6 water-input, and 10 were oil wells.

The daily average oil production of the middle and southwestern districts of Pennsylvania was 5,400 barrels in 1955 as compared with 5,767 barrels in 1954, a decline of 6 percent.

No new oil fields or pools were discovered in Pennsylvania in 1955. The Clough oil field in central Forest County, discovered in 1949, was extended somewhat to the southwest. It now includes approximately 470 acres. Production comes from the Knox Third Stray and the Knox Third sands of the Upper Devonian. There now are 31 oil wells, 7 gas wells, and 4 wells producing both oil and gas. Gas is recycled. Some of the largest wells produced 30 barrels of oil per day at the start, but settled production is about three barrels per day per well.



CRUDE OIL PRICES, PRODUCTION AND WELL COMPLETIONS – BRADFORD FIELD

Figure 3

OIL AND GAS PRODUCTION

The total gas production in Pennsylvania during 1955 is estimated at about 123,604,000 thousand cubic feet as compared with 158,050,000 thousand cubic feet in 1954. The rapid exhaustion of the Benezette-Driftwood field accounted for most of the decline. Total oil production during 1955 is estimated at 8,505,000 barrels as compared with 9,123,000 in 1954, a decrease of 6.8 percent.

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GUIDEBOOKS

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Stratigraphy of Ordovician Limestones and Dolomites of Nittany Valley in area from Bellefonte to Pleasant Gap, Pennsylvania, by F. M. Swartz, M. Rones, A. C. Donaldson, and J. P. Hea.
Stratigraphy and Structure in the Ridge and Valley Area from University Park to Tyrone, Mt. Union, and Lewistown, by F. M. Swartz.
Structure and Stratigraphy of Pennsylvania Sediments in the Plateau Area near Philipsburg and Clearfield, Pennsylvania, by R. P. Nickelsen and E. G. Williams.

Field Guidebook of Appalachian Geology, Pittsburgh to New York, Pittsburgh Geological Society Field Trip, March 26-27, 1955, in conjunction with annual meeting, American Association of Petroleum Geologists, New York, March 28-31, 1955, 120 pp., road logs, physiographic and geologic maps, structure sections, and stratigraphic correlations, and selected bibliography. Descriptive papers by F. M. Swartz, Carlyle Gray, Bradford Willard, T. V. Buckwalter, and Meredith E. Johnson.

SHEET I

TABLE I SUMMARIZED RECORD OF DEEP WELLS DRILLED IN PENNSYLVANIA IN 1955

ELEVATIONS AND DEPTHS ARE IN FEET

COUNTY		Butler	Cameron	Cameron	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield
MAP NUMBER		5	2	3	4	5	6	7	4	9	10
NAME OF WELL		J S Walker 1	New Bethlehem Rod & Gun Club 1	State of Penna. Tract 25, No.3	Eva Moore 1	S. M. Bailey 1	John Hays 1	Gertrude Kirk 1	W M Reiter 1	State of Penna. Tract 32, No. 4	New Shawmut Mining Co, No 1
OPERATOR		J C Walker et al	Wray Drilling Co.	Manufacturers Light & Heat Co.	Rockton Drilling Co.	Rockton Drilling Co.	New York State Nat Gas Corp	Hanley and Bird	Godfrey L. Cabot, Inc.	New York State Nat Gas Corp	Devonian Oil & Gas Co
TOWNSHIP		Bruin Boro	Gibson	Gibson	Union	Union	Brady	Brady	Huston	Goshen	Huston
QUADRANGLE		Foxburg 1	Driftwood 95	Driftwood 106	Penfield 6	Penfield 7	Penfield 8	Penfield 9	Penfield 10	Clearfield 23	Clearfield 24
LATITUDE		2.72 mi. S. 41°05'	2.03 mi. N. 41°20'	.28 mi. S 41°20'	1.20 mi. S 41°05'	.70 mi. S. 41°05'	.60 mi S. 41°05'	.70 mi S. 41°05	.35 mi. N. 41°10'	1.10 mi. S. 41°15'	2.05 mi. S 41°15'
LONGITUDE		1.45 mi. E. 79°45'	.92 mi. E. 78°15'	.93 mi. E. 78°15'	.70 mi. W 78°40'	.85 mi. W. 78°40'	2.10 mi. E. 78°45'	1.28 mi. W 78°40	1.20 mi W 78°30'	1.70 mi. W. 78°20'	.71 mi E. 78°30'
DATE COMPLETED		9-14-55	1-24-55	6-25-55	2-25-55	8-1-55	12-2-55	10-17-55	10-10-55	4-7-55	10-12-55
ELEVATION		1120	919	2009	1800	1800	1646	1741	1786	1987	1650
TULLY		5090-	5351-	6310-	6500-	6415-6540	6449-	6365-6480	6335-6452	6330-6455	6180-
ONONDAGA		5324-5468	6058-	7021-7061	7150- Gas in chert	7052- 213 Mcf gas	7085-	6990-	7027-7077 42 Mcf gas 7040-7043	7037-7085	6855-
ORISKANY		Horizon 5468-	6103-6133 Show S.W. at 6112	7061- Gas	7213-7219	7119-7129 100 Mcf gas	7155- Gas at 7167	7045-7058 Gas	7077-7085	7085- Gas	6927- 114 Mcf gas
SALINA		5675-6684 Salt beds in interval 5962-6375									
LOCKPORT		6684-6901									
ALBION	RED MEDINA (GRIMSBY)	7222-7301									
	WHITE MEDINA (WHIRLPOOL)	7301-7447									
QUEENSTON		7447-									
TOTAL DEPTH		7620	6135	7080	7236	7144	7173	7063	7256	7105	6951
DEEPEST FORMATION TESTED		Albion	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT		Dry	One gallon salt water in 12 hrs. Abandoned	IOF 1,729 Mcf gas from Oriskany R.P. 1460 psi in 24 hrs.	515 Mcf gas from Onondaga after hydrafracing R.P. 3,275 psi in 44 hrs Discovery Well	2,000 Mcf gas from Onondaga-Oriskany zone after hydrafracing R.P. 3950 psi in 48 hrs.	IOF 8,000 Mcf gas from Oriskany R.P. 3800 psi in 10 days	3,500 Mcf gas from Oriskany after shot R.P. 3800 psi in 37 hrs.	Hydrafraced Onondaga and Oriskany No results	IOF 869 Mcf gas from Oriskany R.P. 2,600 psi in 5 days	Shot, acidized and hydrafraced 380 Mcf gas from Onondaga and Oriskany R.P. 2275 psi.

TABLE I
SHEET 2

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY		Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clinton	Clinton	Clinton	Clinton
MAP NUMBER		11	12	13	17	15	16	17	18	19	20
NAME OF WELL		State of Penna Tract 39, No 3	State of Penna Tract 52, No 1	Daniel Fryer 1	A.C. Hopkins 1	James Korb 1	G. Reed 1	State of Penna Tract 3, No 4	D.A. Doebler 4	State of Penna Tract 23, No.5	State of Penna Tract 57, No. 1
OPERATOR		Simpson	New York State Nat Gas Corp	F C Deemer	F.C. Deemer	F.C Deemer	Fairman Drilling Co	Delta Drilling Co	Chas Sampler	Post Publishing Co	New York State Nat Gas Corp
TOWNSHIP		Lawrence	Lawrence	Bell	Bell	Bell	Bell	Leidy	Leidy	Leidy	Chapman
QUADRANGLE		Clearfield 25	Clearfield 26	Punxsutawney 8	Punxsutawney 9	Punxsutawney 10	Punxsutawney 11	Renovo West 191	Renovo West 192	Renovo West 193	Renovo West 194
LATITUDE		1.57 mi. S 41°15'	2.45 mi. S. 41° 15'	1.33 mi. S. 41°00'	2.10 mi. S. 41°00'	2.53 mi. S. 41°00'	1.18 mi. N. 40°55'	1.84 mi. N. 41°20'	2.43 mi. N. 41°20'	.18 mi. N. 41°25'	2.54 mi N. 41°25'
LONGITUDE		.75 mi W 78°25'	2.15 mi E. 78°30'	.30 mi. W. 78°45	1.65 mi W 78°45'	.75 mi. W 78°45'	1.58 mi. E 78°50'	1.41 mi W 77°55'	.73 mi. W. 77°50'	1.00 mi. E. 77°50'	.47 mi. W 77°45'
DATE COMPLETED		9 - 24 - 55	9 - 26 - 55	9 - 6 - 55	7 - 7 - 55	10 - 26 - 55	11 - 9 - 55	1 - 4 - 55	1 - 13 - 55	5 - 16 - 55	12 - 6 - 55
ELEVATION		1530	1939	1960	1665	2117	1967	2072	843	1808	1597
TULLY		5810 -	6205 -	6685 -	6480 -	6899 -	6870 - 6910	6514 -	5283 -	6190 -	5750 -
ONONDAGA		6495 -	6880 -	7410 -	7141 -	7610 -	7444 -	7342 -	6233 -	7025 -	6642 -
ORISKANY		6549 - Gas	6933 - Gas	7482 - 7487	7214 - 7220	7685 -	7532 - 7535 Gas, 7532 - 7537	7360 - Gas, 7363 - 7365	6263 -	7044 - 7079	6667 - Gas at 6669
SALINA											
LOCKPORT											
ALBION	RED MEDINA (GRIMSBY)										
	WHITE MEDINA (WHIRLPOOL)										
QUEENSTON											
TOTAL DEPTH		6561	6975	7700	7355	7810	7624	7370	6267	7107	6711
DEEPEST FORMATION TESTED		Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT		10F 280 Mcf gas from Oriskany R.P. 2,100 psi in 6 days	778 Mcf gas from Oriskany after shot 6931 - 6940 R P 3,160 psi in 128 hrs.	2,500 Mcf gas after hydrafracing R.P. 3,820 psi in 48 hrs	3,300 Mcf gas after hydrafracing R.P. 3,500 psi in 24 hrs	3,400 Mcf gas after hydrafracing	1,200 Mcf gas after hydrafracing	14,300 Mcf gas from Oriskany R.P 747 psi in 12 hrs.	Dry	Dry	1,186 Mcf gas from Oriskany R. P. 3,800 psi in 59 hrs.

TABLE I
SHEET 3

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY		Clinton	Clinton	Clinton	Clinton	Crawford	Elk	Elk	Elk	Elk	Elk
MAP NUMBER		21	22	23	24	25	26	27	28	29	30
NAME OF WELL		State of Penna Tract 15, No 7	State of Penna Tract 15, No.8	State of Penna Tract 46, No. 1	State of Penna Tract 46, No. 2	T R Cain et al 1	Boosters Club 1	Marion Brooks 1	Louise Chappelle 1	Paul Chase 2	Crown Petroleum Co., No. 1
OPERATOR		New York State Nat. Gas Corp.	New York State Nat Gas Corp	Delta Drilling Co	New York State Nat Gas Corp	Mid-Atlantic Oil & Gas Co	Sam Jack	S W Jack et al	Fairman Drilling Co	Fairman Drilling Co.	Blain Wood et al
TOWNSHIP		Chapman	Chapman	Chapman	Chapman	Conneaut	Benezette	Benezette	Benezette	Benezette	Benezette
QUADRANGLE		Renovo East 9	Renovo East 10	Renovo East 11	Renovo East 12	Linesville 11	Benezette 244	Benezette 245	Benezette 246	Benezette 247	Benezette 248
LATITUDE		1.60 mi. S. 41°30'	1.80 mi. S 41°30'	1.97 mi. S 41°30'	1.98 mi S. 41°30'	1.12 mi N. 41°40'	2.00 mi N 41°15'	2.03 mi N. 41°15'	2.05 mi. N 41°15'	2.06 mi. N. 41°15'	2.28 mi. N 41°15'
LONGITUDE		.36 mi. E. 77°45'	.01 mi. E. 77°45'	.38 mi. E. 77°45'	1.11 mi. E 77°45'	1.40 mi. W 80°25'	.87 mi E 78°25'	.81 mi E. 78°25'	.17 mi. E. 78°25'	.48 mi. E. 78°25'	1.18 mi. E. 78°25'
DATE COMPLETED		3 - 7 - 55	3 - 31 - 55	8 - 13 - 55	12 - 28 - 55	12 - 17 - 55	1 - 14 - 55	3 - 18 - 55	4 - 4 - 55	3 - 3 - 55	1 - 14 - 55
ELEVATION		1791	1780	1707	1639	1182	1072	1069	1268	1417	1086
TULLY		5834 - 5931	5815 - 5910	5742 -	5721 -		5475 -	5477 -	5800 -	5887 -	5498 -
ONONDAGA		6674 -	6635 -	6659 -	6579 -	2563 -	6124 -	6117 -	6430 -	6535 -	6165 -
ORISKANY		6699 - Gas	6662 - Gas at 6664	6683 - Gas at 6685	6603 - 6646 Gas	Salt water at 2785	6175 - Gas	6166 - Gas	6466 - Salt water at 6478	6575 - Gas	6207 - Gas
SALINA						Salt 3074 - 3105 3226 - 3251					
LOCKPORT											
ALBION	RED MEDINA (GRIMSBY)					3918 -					
	WHITE MEDINA (WHIRLPOOL)					5 Mcf gas					
QUEENSTON						4097 -					
TOTAL DEPTH		6709	6664	6691	6651	4133	6182	6181	6480	6598	6220
DEEPEST FORMATION TESTED		Oriskany	Oriskany	Oriskany	Oriskany	Albion	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT		45,000 Mcf gas from Oriskany R.P. 4031 psi in 24 hrs	52,000 Mcf gas from Oriskany R.P. 3,520 psi in 27 hrs	19,545 Mcf gas from Oriskany R.P. 3,400 psi in 40 hrs.	731 Mcf gas from Oriskany R.P. 2,780 psi in 6 days	Dry	10F. 5,500 Mcf gas from Oriskany R.P. 2,500 psi in 24 hrs	2,300 Mcf gas from Oriskany after shot R.P. 1,900 psi in 14 hrs	Salt water in Oriskany Abandoned	3,000 Mcf gas from Oriskany after shot R.P. 2,400 psi in 48 hrs.	10F. 1,600 Mcf gas from Oriskany R.P. 2,160 psi in 72 hrs.

TABLE I
SHEET 4

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY		Elk	Elk	Elk	Elk	Elk	Elk	Elk	Elk	Elk	Elk
MAP NUMBER		31	32	33	34	35	36	37	38	40	40
NAME OF WELL		State of Penna Tract 26, No.14	State of Penna. Tract 29, No18	State of Penna Tract 29, No19	State of Penna. Tract 29, No20	State of Penna. Tract 30, No. 7	State of Penna Tract 33, No. 11	State of Penna Tract 37, No 4	State of Penna Tract 37, No 5	State of Penna Tract 37, No. 6	State of Penna Tract 38, No. 5
OPERATOR		Manufacturers Light & Heat Co	New York State Not Gas Corp	New York State Not Gas Corp	New York State Not. Gas Corp	New York State Nat. Gas Corp	New York State Not Gas Corp	New York State Not Gas Corp	New York State Not Gas Corp	New York State Nat. Gas Corp	Gross Associates
TOWNSHIP		Benezette	Benezette	Benezette	Benezette	Benezette	Benezette	Benezette	Benezette	Benezette	Jay
QUADRANGLE		Benezette 249	Benezette 250	Benezette 251	Benezette 252	Benezette 253	Benezette 254	Benezette 255	Benezette 256	Benezette 257	Benezette 258
LATITUDE		.76 mi. S 41°20'	2.75 mi. N. 41°15'	2.58 mi. S. 41°20'	1.86 mi. S. 41°20'	.30 mi. N. 41°15'	.92 mi. N 41°15'	1.68 mi. N 41°15'	.74 mi. N. 41°15'	1.44 mi. N. 41°15'	.10 mi. N. 41°15'
LONGITUDE		1.02 mi. W. 78°15'	1.04 mi. W 78°20'	2.15 mi. E. 78°25'	1.64 mi W. 78°20'	.98 mi. E. 78°20'	1.04 mi. E. 78°25'	.10 mi. E 78°25'	.23 mi. W 78°25'	.06 mi. W. 78°25'	.30 mi. W. 78°25'
DATE COMPLETED		7-27-55	3-3-55	3-24-55	3-17-55	3-11-55	2-23-55	1-19-55	5-10-55	5-3-55	2-23-55
ELEVATION		2070	2106	1673	1319	2154	1271	1846	1877	1736	1922
TULLY		6263-6390	6305-6412	6080-	5815-	6379-6510	5542-	6310-	6274-6352	6216-	6220-
ONONDAGA		7015-7049	6963-7003	6718-	6453-	7160-7215	6200-	6960-	6995-	6878-	6890-
ORISKANY		7049-7074 Gas at 7050	7003- Gas	6758- Gas	6487- Gas	7215- Gas	6249-6274 Gas at 6252	7005- Gas at 7011	7042- Gas	6929- Gas at 6934	6935- Gas
SALINA											
LOCKPORT											
ALBION	RED MEDINA (GRIMSBY)										
	WHITE MEDINA (WHIRLPOOL)										
QUEENSTON											
TOTAL DEPTH		7077	7029	6790	6508	7225	6283	7029	7067	6939	6943
DEEPEST FORMATION TESTED		Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT		10F 1,243 Mcf gas from Oriskany R.P. 1150 psi in 48 hrs	10F 4,775 Mcf gas from Oriskany R.P. 1,120 psi in 41 hrs	10F 1,313 Mcf gas from Oriskany R.P. 1,260 psi. in 17 hrs	4,055 Mcf gas from Oriskany after shot R.P. 1,125 psi in 21 hrs	10F 696 Mcf gas from Oriskany R.P. 1,140 psi in 4 hrs.	10F 4548 Mcf gas from Oriskany R.P. 1,460 psi. in 15 hrs.	5,731 Mcf gas from Oriskany after shot R.P. 2725 psi in 20 hrs.	894 Mcf gas from Oriskany after shot R.P. 2,850 psi in 80 hrs	933 Mcf gas from Oriskany after shot R.P. 2,750 psi in 116 hrs	2,900 Mcf gas from Oriskany after shot R.P. 1800 psi in 16 hrs

TABLE I
SHEET 5

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY		Elk	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie
MAP NUMBER		44	48	43	44	45	50	47	48	49	50
NAME OF WELL		Penna. Game Lands Tract 34C, No. 3	Himes & Hull 1	H P Laskoski 1	Peterson 1	W Thayer 1	Andrews 1	Edna Vickey 1	B. P. Bean 1	Crawford 1	Paul Osborne 2
OPERATOR		Manufacturers Light & Heat Co	D R Stevens and A. J. Skrobot	D.R. Stevens and A.J. Skrobot	James Nichols	Amity Oil & Gas Co.	Ryan, Flanagan et al	Ryan, Flanagan et al	The Sylvania Corp, No 372	Flanagan et al	Stevens et al
TOWNSHIP		Benezette	Summit	Summit	Summit	Summit	Summit	Summit	Summit	Summit	Summit
QUADRANGLE		Clearfield 27	Erie 15	Erie 16	Erie 17	Erie 18	Erie 19	Erie 20	Erie 21	Erie 22	Erie 23
LATITUDE		.11 mi. S. 41°15'	2.67 mi. S 42°05'	2.30 mi. S 42°05'	2.22 mi. S 42°05'	1.91 mi. S 42°05'	2.10 mi. S. 42°05'	2.20 mi. S. 42°05'	2.17 mi. S 42°05'	2.40 mi. S. 42°05'	2.37 mi. S 42°05'
LONGITUDE		.63 mi. E. 78°20'	1.80 mi. W. 80°00'	1.81 mi. W. 80°00'	1.47 mi. E. 80°00'	1.64 mi. W 80°00'	.73 mi. W 80°00'	1.24 mi. W 80°00'	2.18 mi. W. 80°00'	2.07 mi. E. 80°05'	2.04 mi. W 80°00'
DATE COMPLETED		8-30-55	1-4-55	3-3-55	6-30-55	5-2-55	5-16-55	7-1-55	9-12-55	8-10-55	7-1-55
ELEVATION		2078	1325	1270	1250	1241	1144	1170	1305	1314	1312
TULLY		6395-	1957-	1917-2017	1898-	1903-	1812-	1819-1921	1950-	1952-2058	1957-
ONONDAGA			2119-	2145-	2137-	2130-	2038-	2038-	2180-	2181-	2188-
ORISKANY			2440- Gas	2395- Gas at 2397	2382- Show of oil Salt water	2385- Salt water	2288- Gas	Horizon 2287-	2423- Gas	2423- Gas	2428- Gas
SALINA											
LOCKPORT											
ALBION	RED MEDINA (GRIMSBY)										
	WHITE MEDINA (WHIRLPOOL)										
QUEENSTON											
TOTAL DEPTH		7378	2447	2399	2392	2385	2291	2337	2427	2434	2442
DEEPEST FORMATION TESTED		Tully	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT		Abandoned above Onondaga	IOF 1,268 Mcf gas from Oriskany R. P. 567 psi in 15 min.	IOF 2,974 Mcf gas from Oriskany R. P. 765 psi in 15 min	Show oil at 2389 Salt water rose 40 ft. in 45 min Abandoned	Salt water in Oriskany Abandoned	IOF 575 Mcf gas from Oriskany R. P. 756 psi	Dry	IOF 3,700 Mcf gas from Oriskany R. P. 806 psi in 1 hr.	IOF 6,000 Mcf gas from Oriskany R. P. 750 psi in 5 min.	IOF 3396 Mcf gas from Oriskany

TABLE I
SHEET 6

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY		Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie
MAP NUMBER		51	52	53	54	55	56	57	58	59	60
NAME OF WELL		C.W. Willing 1	D.Z. Willing 1	D.Z. Willing 2	Crawford 2	Loskoski 2	Oless 1	Al Fogle 1	J. Fogle 1	Ed Bronakowski 1	Ignasiak 1
OPERATOR		The Sylvania Corp, No 370	The Sylvania Corp, No. 355	The Sylvania Corp No 367	Bryan and Flanagan	D R Stevens et al	Siegel et al	Erico Drilling Co	Erico Drilling Co.	J. Pitanyak	Amity Oil & Gas Co.
TOWNSHIP		Summit	Summit	Summit	Summit	Summit	Summit	Summit	Summit	Summit	Summit
QUADRANGLE		Erie 24	Erie 25	Erie 26	Erie 27	Erie 28	Erie 29	Erie 30	Erie 31	Erie 32	Erie 33
LATITUDE		2.63 mi. S 42°05'	2.67 mi. S. 42°05'	2.47 mi. S. 42°05'	2.60 mi. S. 42°05'	2.11 mi. S. 42°05'	2.29 mi. S 42°05'	2.20 mi. S 42°05'	2.28 mi. S 42°05'	2.30 mi. S 42°05'	2.37 mi. S 42°05'
LONGITUDE		1.71 mi. W 80°00'	1.58 mi. W. 80°00'	1.85 mi W. 80°00'	2.00 mi. W 80°00'	1.99 mi W. 80°00'	2.79 mi. E. 80°05'	1.12 mi. E. 80°05'	1.21 mi. E. 80°05'	1.32 mi. E 80°05'	1.35 mi. E. 80°05'
DATE COMPLETED		6 - 3 - 55	4 - 7 - 55	4 - 16 - 25	9 - 30 - 55	10 - 3 - 55	10 - 26 - 55	11 - 15 - 55	5 - 27 - 55	10 - 10 - 55	12 - 17 - 55
ELEVATION		1311	1301	1289	1323	1268	1268	1244	1246	1254	1262
TULLY		1957 –	1960 –	1936 –	1966 - 2076	1854 –	1908 –	1877 –	1875 - 1997	1880 - 1990	1898 –
ONONDAGA		2184 –	2180 –	2164 –	2191 –	2160 –	2135 –	2102 —	2105 –	2115 –	2123 –
ORISKANY		2428 - Gas	2436 – Show of gas 1 gal salt water	2416 – Gas	2440 – Gas	2422 – Salt water	2377 – Gas	2344 — Gas	2351 – Gas	2359 – Gas	2362 – Gas
SALINA											
LOCKPORT											
ALBION	RED MEDINA (GRIMSBY)										
	WHITE MEDINA (WHIRLPOOL)										
QUEENSTON											
TOTAL DEPTH		2436	2442	2417	2451	2425	2389	2356	2356	2371	2374
DEEPEST FORMATION TESTED		Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT		10F 1,500 Mcf gas from Oriskany R P 805 psi	6 Mcf gas 1 gal salt water from Oriskany	10F 1,684 Mcf gas from Oriskany R P 850 psi	10F 5,499 Mcf gas from Oriskany R.P. 810 psi	Salt water rose 150 ft in 20 min Abandoned	10F 6,790 Mcf gas from Oriskany	10F 4,389 Mcf gas from Oriskany	226 Mcf gas from Oriskany after shot R P 795 psi	10F 1,731 Mcf gas from Oriskany R.P. 620 psi in 15 min.	10F 8,361 Mcf gas from Oriskany

TABLE I
SHEET 7

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY		Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie
MAP NUMBER		61	62	63	64	65	66	67	68	69	70
NAME OF WELL		Bearee 1	Goodwell 1	B Soltese 1	Art Weill 1	W.A Will	P. Vetter	Smith 1	Andy Dolak 1	King Robinson 1	Herb Anderson 1
OPERATOR		Summit Oil & Gas Co	Erico Drilling Co	D R Stevens et al	Will et al	M. Bolles	Flanagan et al	Flanagan et al	Chas. Siegel et al	The Sylvania Corp. No. 373	The Sylvania Corp., No 374
TOWNSHIP		Summit	Summit	Summit	Summit	Summit	Summit	Summit	Summit	Summit	Summit
QUADRANGLE		Erie 34	Erie 35	Erie 36	Erie 37	Erie 38	Erie 39	Erie 40	Erie 41	Erie 42	Erie 43
LATITUDE		2.51 mi. S 42°05'	2.37 mi. S. 42°05'	2.06 mi. S. 42°05'	2.18 mi. S. 42°05'	2.01 mi. S 42°05'	2.32 mi. S. 42°05'	2.25 mi. S. 42°05'	2.04 mi. S. 42°05'	2.52 mi. S 42°05'	2.84 mi. S. 42°05'
LONGITUDE		1.31 mi. E. 80°05'	.99 mi. E. 80°05'	1.50 mi. E. 80°05'	1.55 mi. E. 80°05'	.68 mi. E 80°05'	.55 mi. E. 80°05'	.75 mi. E 80°05'	1.00 mi. E. 80°05'	.87 mi. E. 80°05'	2.03 mi. E 80°05'
DATE COMPLETED		11 - 23 - 53	8 - 1 - 55	10 - 17 - 55	11 - 8 - 55	7 - 1 - 55	11 - 8 - 55	12 - 10 - 55	12 - 12 - 55	9 - 30 - 55	11 - 22 - 55
ELEVATION		1274	1260	1221	1239	1185	1232	1237	1201	1251	1291
TULLY		1910 –	1899 –	1854 –	1888 –	1834 –	1858 –	1861 –	1840 –	1890 –	1935 –
ONONDAGA		2133 –	2121 –	2079 –	2102 –	2060 –	2091 –	2084 –	2073 –	2111 –	2162 –
ORISKANY		2372 – Gas	2367 – Gas Hole full salt water	2323 – Gas	2345 – Gas	2309 – 2330 Salt water	2335 – Gas at 2342 Show oil in chert	2324 – Gas	2308 – Gas	2356 – Gas	2414 – Gas Salt water
SALINA											
LOCKPORT											
ALBION	RED MEDINA (GRIMSBY)										
	WHITE MEDINA (WHIRLPOOL)										
QUEENSTON											
TOTAL DEPTH		2386	2376	2335	2356	2330	3349	2336	2312	2356	2427
DEEPEST FORMATION TESTED		Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT		10F 360 Mcf gas from Oriskany	10F 2670 Mcf gas R. P. 806 psi	10F. 11,711 Mcf gas from Oriskany R. P. 801 psi in 24 hrs.	10F 6,400 Mcf gas from Oriskany	Salt water rose 1,800 ft at 2329 Abandoned	10F. 7,500 Mcf gas from Oriskany	10F. 8000 Mcf gas from Oriskany	10F. 1,000 Mcf gas from Oriskany	10F 3800 Mcf gas from Oriskany R. P. 810 psi.	10F 1,800 Mcf gas 1 bbl salt water from Oriskany R. P. 800 psi

TABLE I
SHEET 8

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY		Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Indiana
MAP NUMBER		74	72	73	74	75	76	73	78	79	80
NAME OF WELL		Paul Osborne 3	Inman 1	Weiss 1	V. Brooks 1	Barton 1	Lininger 1	T Siegel 1	H. Flath 1	L. I. Sill 1	Farmers & Miners Trust Co., No. 1
OPERATOR		D R. Stevens et al	Summit Oil & Gas Co.	Chas Siegel	The Sylvania Corp, No	Fairman Drilling Co.	The Sylvania Corp, No 366	The Sylvania Corp, No. 356	Douglas Brown	Plymouth Oil Co.	Columbian Carbon Co.
TOWNSHIP		Summit	Summit	Summit	Summit	Summit	Summit	Summit	Mill Creek	Wayne	Banks
QUADRANGLE		Erie 44	Erie 45	Erie 46	Erie 47	Erie 48	Erie 49	Erie 50	Erie 51	Corry 24	Punxsutawney 4
LATITUDE		2.77 mi. S. 42°05'	2.82 mi. S 42°05'	2.82 mi. N 42° 00'	2.40 mi. N 42°00'	2.04 mi. N. 42°00'	2.15 mi. N 42°00'	2.48 mi N. 42°00'	.85 mi. S. 42°05'	.51 mi. N 41°55'	1.75 mi. S 40°55'
LONGITUDE		2.08 mi. W. 80°00	1.41 mi. W. 80°00'	1.44 mi W 80°00'	.77 mi. E 80°05'	1.52 mi. E. 80°05'	1.77 mi E 80°05'	2.13 mi. E 80°05'	.94 mi. W. 80°05'	.27 mi E 79°45'	.30 mi. W. 78°50'
DATE COMPLETED		11-23-55	4-8-55	3-18-55	8-11-55	4-1-55	4-1-55	3-23-55	8-3-55	3-23-55	10-20-55
ELEVATION		1335	1328	1332	1351	1370	1315	1286	892	1440	1963
TULLY		1979 –	1984 –	1968 –	2015 –	2045 –	1983 –	1945	1511 –	2680 – 2760	6770 –
ONONDAGA		2204 –	2206 –	2210 –	2239 –	2269 –		2175	1728	2920 – 3068	7475 – Chert, 7485 – Hfcd 7498-7600
ORISKANY		2066 – Gas	2458 – Show gas at 2460 Salt water at 2466	2464 Show of gas Salt water	2488 – Salt water	2514 – Salt water		2425 – Salt water	No sandstone	3068 – 3073 Show gas at 3068	7566 – 7570
SALINA											
LOCKPORT										Newburg 3865 – Black water at 3900	
ALBION	RED MEDINA (GRIMSBY)										
	WHITE MEDINA (WHIRLPOOL)									4176 –	
QUEENSTON											
TOTAL DEPTH		2462	2470	2487	2494	2523	2002	2432	2005	4336	7600
DEEPEST FORMATION TESTED		Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Tully	Oriskany	Oriskany	Albion	Oriskany
RESULT		10F8,700 Mcf gas from Oriskany R. P. 803 psi	15 Mcf gas 20 gals salt water per hr from Oriskany Abandoned	10 Mcf gas R P 650 psi Salt water rose 500 ft. 2471-2478 Abandoned	1 bbl. salt water in 15 min from Oriskany Abandoned	60 gals salt water per hr. at 2523 Salt water rose 1500 ft. in 72 hrs. Abandoned	Abandoned above Onondaga	Salt water in Oriskany Abandoned	Salt water rose 2000 ft Abandoned	Dry	No gas before 431 Mcf gas after hydrafracing R.P 3820 psi in 42 hrs

TABLE I
SHEET 9

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY		Indiana	Indiana	Indiana	Jefferson	Jefferson	Northumberland	Potter	Potter	Potter	Potter
MAP NUMBER		84	82	83	84	85	86	87	88	89	90
NAME OF WELL		Herbert Gernandt 1	Lucinda Mitchell 1	M.J. Shankel Estate, No 1	Clair Reed 1	H.C McClure 1	Geo. C. Krick 1	William Nye HW-43	Flewellyn HW-41	A.F Woodward 1	Ocea Q. Britton HW-39
OPERATOR		Fairman Drilling Co	Fryer and Hanson	Felmont Oil Corp., et al	Fairman Drilling Co.	Columbian Carbon Co	Angas Corp.	New York State Nat Gas Corp.	New York State Nat. Gas Corp	New York State Nat Gas Corp.	New York State Nat. Gas Corp.
TOWNSHIP		Grant	Pine	Buffington	Gaskill	Gaskill	Ralpho	Harrison	Harrison	Harrison	Harrison
QUADRANGLE		Punxsutawney 5	Barnesboro 1	Barnesboro 4	Punxsutawney 6	Punxsutawney 7	Shamokin 2	Gaines 69	Gaines 70	Gaines 71	Gaines 72
LATITUDE		1.70 mi. S 40°50′	.30 mi. N. 40°35′	2.55 mi. N. 40°30′	1.25 mi. N. 40°55′	1.72 mi. N 40°55′	1.77 mi. N 40°50′	.50 mi. S 42°00	.72 mi. S 42°00′	.75 mi. S 42°00′	1.09 mi. S. 42°00′
LONGITUDE		1.50 mi. E 79°00′	1.48 mi. E. 79°00′	.06 mi. E 79°00′	1.05 mi. E. 78°50′	1.21 mi. E. 78°50′	.20 mi. E. 76°35′	1.18 mi. W. 77°40′	1.00 mi. W. 77°40′	1.50 mi. W 77°40′	.40 mi. W. 77°40′
DATE COMPLETED		6-10-55	10-3-55	6-14-55	5-9-55	12-20-55	1-13-55		11-15-55	6-30-55	10-12-55
ELEVATION		1777	1670	1608	1813	1930	728		2199	2117	2088
TULLY		6901-	7140-	7390-	6780-	?6750?-			4397-	4358-4412	4255-
ONONDAGA		7565- Show gas at 7631 Shot at 7597	7942-	8177- Chert, 8230-	7424- Chert 7432- Show of gas	7938- Chert 7975-8091 Gas 8040-8110	836-		5094-	5020-5049	4917-
ORISKANY		7665-7671	8169- Show of gas	8290-8306	7504-7511	8091-	Ridgeley 1004-1005 Shriver 1005-1070		5122- Gas	5049- Gas	4947- Gas
SALINA											
LOCKPORT											
ALBION	RED MEDINA (GRIMSBY)										
	WHITE MEDINA (WHIRLPOOL)										
QUEENSTON											
TOTAL DEPTH		7687	8199	8317	7611	8110	1384		5149	5074	4970
DEEPEST FORMATION TESTED		Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT		167 Mcf gas from Onondaga after hydrofracing R.P. 2,400 psi in 2 hrs.	475 Mcf gas from Oriskany after hydrofracing R.P. 3,750 psi	200 Mcf gas from Onondaga after hydrofracing R.P. 3475 psi in 96 hrs	990 Mcf gas from Onondaga after hydrofracing R.P. 3850 psi in 3 days Discovery Well	2,843 Mcf gas from Onondaga-Oriskany zone R.P. 3,720 psi in 96 hrs.	Dry	Gas Storage Well	Gas Storage Well	Gas Storage Well	Gas Storage Well

TABLE I
SHEET 10

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY		Potter	Potter	Potter	Potter	Potter	Potter	Potter	Potter	Potter	Potter
MAP NUMBER		91	98	93	94	95	96	97	98	99	100
NAME OF WELL		Chas K Erway HW-38	Arthur Seeley et ux, HW40	Mae Courtright HW-29	A. Schofield No 3, HW-28	Wesley E. Carey HW-37	Leland Schofield 2	Arling R. Judd 2	D.W Lewis 1	C W Warriner et al	H. Courtright 2
OPERATOR		New York State Nat Gas Corp.	New York State Nat. Gas Corp.	New York State Nat. Gas Corp	New York State Nat Gas Corp	New York State Nat. Gas Corp.	New York State Nat Gas Corp.	New York State Nat. Gas Corp	New York State Nat. Gas Corp.	New York State Nat. Gas Corp.	New York State Nat Gas Corp
TOWNSHIP		Harrison	Harrison	Harrison	Harrison	Harrison	Harrison	Harrison	Harrison	Harrison	Harrison
QUADRANGLE		Gaines 73	Gaines 74	Gaines 75	Gaines 76	Gaines 77	Gaines 78	Gaines 79	Gaines 80	Gaines 81	Gaines 82
LATITUDE		1.05 mi S 42°00'	1.22 mi. S 42°00'	1.10 mi. S. 42°00'	1.82 mi. S. 42°00'	1.43 mi. S. 42°00'	1.90 mi. S 42°00'	1.65 mi. S 42°00'	1.90 mi S 42°00'	1.89 mi. S. 42°00'	2.10 mi. S 42°00'
LONGITUDE		.33 mi E 77°40'	.80 mi. E. 77°40'	1.80 mi. W. 77°40'	.93 mi. W. 77°40'	.49 mi. E. 77°40'	2.09 mi. W. 77°40'	1.84 mi. W. 77°40'	.57 mi W 77°40'	.18 mi. E. 77°40'	1.40 mi. E. 77°45'
DATE COMPLETED		8-26-55	10-4-55	5-13-55	2-11-55	9-14-55	6-21-55	8-16-55	9-12-55	3-25-55	6-7-55
ELEVATION		2243	2100	2225	2033	1921	2120	2286	2190	1868	2057
TULLY		4398-	4225-	4449-	4220-	4019-	4263-	4447-	4333-	4012-	4324-
ONONDAGA		5072-5110	4893-	5100-	4869-	4719-	4923-	5154-	4992-	4676-	4975-
ORISKANY		5110- Gas at 5116	4922- Gas	5129 Gas	4895- Gas at 4900	4749- Gas	4959- Gas	5178- Gas at 5188	5024- Gas	4707- Gas	5011- Gas
SALINA											
LOCKPORT											
ALBION	RED MEDINA (GRIMSBY)										
	WHITE MEDINA (WHIRLPOOL)										
QUEENSTON											
TOTAL DEPTH		5133	4947	5152	4920	4757	4979	5203	5050	4730	5035
DEEPEST FORMATION TESTED		Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT		Gas Storage Well	Gas Storage Well	Gas Storage Well	Gas Storage Well	Gas Storage Well	Gas Storage Well	Gas Storage Well	Gas Storage Well	Gas Storage Well	Gas Storage Well

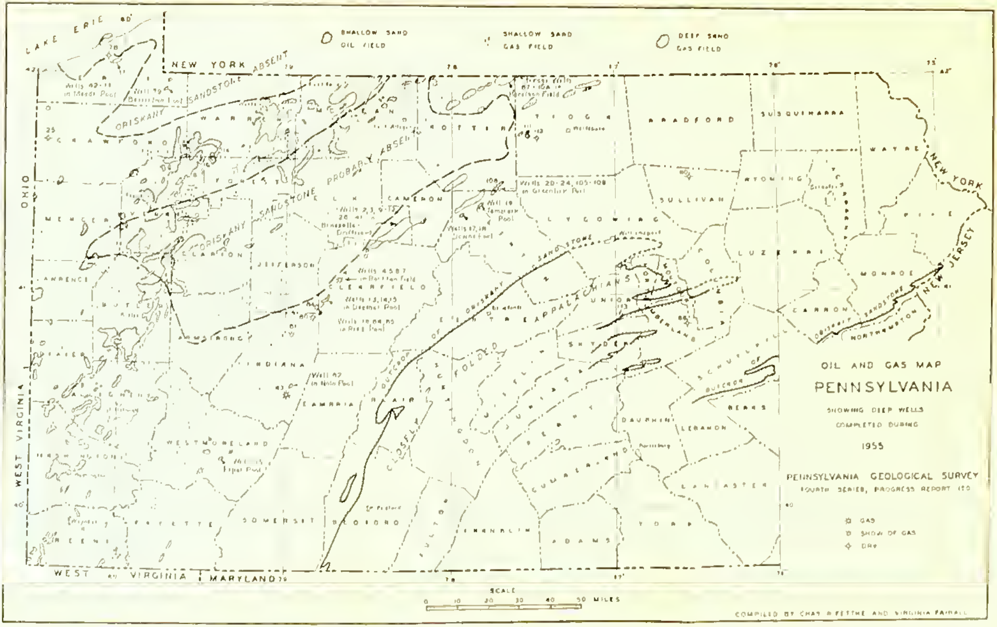
TABLE I
SHEET II

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY		Potter	Potter	Potter	Potter	Potter	Potter	Potter	Potter	Potter	Sullivan
MAP NUMBER		101	104	103	104	105	106	107	108	109	110
NAME OF WELL		Fred Plaisted et al, No. 2	Arling R Judd 1	Walter Hurlburt HW-42	Miller 1	Ralph Groves 1	State of Penna Tract 16, No 8	State of Penna. Tract 58, No. 1	State of Penna Tract 16, No 7	State of Penna. Tract 45, No. 1	B. Bruschart 1
OPERATOR		New York State Nat. Gas Corp.	New York State Nat Gas Corp.	New York State Nat. Gas Corp.	New York State Nat. Gas Corp	New York State Nat Gas Corp	New York State Nat. Gas Corp.	New York State Nat Gas Corp.	New York State Nat. Gas Corp	New York State Nat Gas Corp.	Bluerock Drilling Co.
TOWNSHIP		Harrison	Harrison	Harrison	Harrison	Stewardson	Stewardson	Stewardson	Stewardson	Stewardson	Forks
QUADRANGLE		Gaines 83	Gaines 84	Gaines 85	Gaines 86	Galeton 18	Galeton 19	Galeton 20	Renovo East 7	Renovo East 8	Powell 2
LATITUDE		2.20 mi. S. 42°00'	2.10 mi. S. 42°00'	2.45 mi. S. 42°00'	2.80 mi. N 41°55'	.06 mi. N. 41°30'	.30 mi. N. 41°30'	1.00 mi. N. 41°30'	1.32 mi. S. 41°30'	.30 mi. S. 41°30'	2.40 mi. N. 41°30'
LONGITUDE		1.62 mi. E. 77°45'	1.78 mi W. 77°40'	1.29 mi. W. 77°40'	1.46 mi. W. 77°40'	1.82 mi. E 77°45'	2.14 mi. E. 77°45'	1.10 mi. W 77°40'	.74 mi. E 77°45'	1.73 mi. E. 77°45'	1.74 mi. E. 76°35'
DATE COMPLETED		5 - 20-55	6 - 6 - 55	11 - 17 - 55	1955	5 - 6 - 55	7 - 28 - 55	12 - 5 - 55	1 - 25 - 55	6 - 21 - 55	3 - 10 - 55
ELEVATION		2009	2043	2262	1861	1872	1875	2042	1587	1813	1743
TULLY		4273-	4210-	4430-		5863-5950	5830-	5951-	5616-5710	5720-	5215-5380
ONONDAGA		4920-	4864-	5101-		6689-	6722-	6837-	6465-	6564-	6837-
ORISKANY		4955- Gas	4895- Gas	5131- Gas		6718- Gas	6751- Gas	6856- Gas at 6859	6489- Gas	6591- Gas	7097-
SALINA											
LOCKPORT											
ALBION	RED MEDINA (GRIMSBY)										
	WHITE MEDINA (WHIRLPOOL)										
QUEENSTON											
TOTAL DEPTH		4976	4918	5137		6721	6754	6860	6501	6596	7192
DEEPEST FORMATION TESTED		Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT		Gas Storage Well	Gas Storage Well	Gas Storage Well	Gas Storage Well	IOF 86,000 Mcf gas from Oriskany R.P. 4,040 psi in 24 hrs.	IOF 62,000 Mcf gas from Oriskany R.P. 3,490 psi in 10 days	IOF 85,000 Mcf gas from Oriskany R.P. 2,690 psi in 10 days	IOF 32,500 Mcf gas from Oriskany R.P. 4,240 psi in 39 hrs. Discovery Well	IOF 124,000 Mcf gas from Oriskany R.P. 3,585 psi in 48 hrs.	Dry

SHEET 12

COUNTY		Tioga	Tioga	Union	Warren	Westmoreland					
MAP NUMBER		111	112	113	114	115					
NAME OF WELL		Hubert 1	A Brookmiller 1	Reno Solomon 1	J. Bowman Proper 1	Fred Musnug 2					
OPERATOR		James Drilling Co.	James Drilling Co.	Godfrey L. Cabot, Inc.	S. A. Breene	The Peoples Nat. Gas Co					
TOWNSHIP		Gaines	Gaines	Buffalo	Triumph	Unity					
QUADRANGLE		Galeton 17	Antrim 10	Sunbury 1	Tidioute 2	Donegal 7					
LATITUDE		1.82 mi. S 41°45'	2.37 mi. S. 41°45'	1.25 mi. S 40°55'	1.57 mi. S. 41°40'	1.34 mi. S. 40°15'					
LONGITUDE		1.95 mi. W. 77°30'	.29 mi. E. 77°30'	1.45 mi. E. 77°00'	.35 mi. W. 79°25'	1.35 mi. W 79°20'					
DATE COMPLETED		3 - 3 - 55	2 - 26 - 55	5 - 26 - 55	11 - 19 - 55	6 - 3 - 55					
ELEVATION		1517	1911	1028	1622	2087					
TULLY		4827 -	5337 -		4075 - 4140	7850 -					
ONONDAGA		5688 -	6229 -		4375 - 4470	8548 -					
ORISKANY		5706 - Small show gas Salt water	6251 - 6281 Show salt water		4470 - 4480 Small show gas Salt water at 4471	8740 - Show salt water					
SALINA					4675 - 5350 Salt, 4888 - 4908 4965 - 5000 5072 - 5227						
LOCKPORT					5350 - 5600 Black water 1 bbl per hr						
ALBION	RED MEDINA (GRIMSBY)				Thorold 5750 - 5780 Grimsby 5780 - 5920						
	WHITE MEDINA (WHIRLPOOL)			Tuscarora 0 - 492	5950 - 5960						
QUEENSTON				Juniata 492 - 2288 Oswego 2288 - 3240	5960 - 6004						
TOTAL DEPTH		5747	6286	8002	6004	8773					
DEEPEST FORMATION TESTED		Oriskany	Oriskany	Beekmantown	Albion	Oriskany					
RESULT		3 Mcf gas and salt water in Oriskany	20 gallons salt water in 30 hours from Oriskany Abandoned	Martinsburg shale 3240 - 5443 Trenton & Black River 5443 - 7350 Beekmantown 7350 - Dry	Dry	Dry					


SHALLOW SAND OIL FIELD
SHALLOW SAND GAS FIELD
DEEP SAND GAS FIELD
OIL AND GAS MAP
PENNSYLVANIA
SHOWING DEEP WELLS COMPLETED DURING
1955
PENNSYLVANIA GEOLOGICAL SURVEY
FOURTH SERIES, PROGRESS REPORT 150
GAS
SHOW OF GAS
DRY
SCALE
0 10 20 30 40 50 MILES
COMPILED BY CHAS. R. FETTKE AND VIRGINIA FAIRALL
LAKE ERIE
NEW YORK
OHIO
WEST VIRGINIA
MARYLAND
NEW JERSEY
ORISKANY SANDSTONE ABSENT
ORISKANY SANDSTONE PROBABLY ABSENT
OUTCROP OF ORISKANY SANDSTONE
CLOSELY FOLDED APPALACHIANS
Wells 82-11 in Mead Pool
Well 79 Bentley Pool
Wells 2,3, 9-15, 20 ...
Wells 4,5,8,7 in Barton Field
Wells 13,14,15 in Deemer Pool
Wells 16,64,65 in Rice Pool
Well 62 in Nolo Pool
Wells 17,18 Jonne Pool
Well 19 Tamarack Pool
Wells 20-24, 105-108 in Greenlick Pool
Wells ... Pipe Pool
CRAWFORD
WARREN
MCKEAN
POTTER
TIOGA
BRADFORD
SUSQUEHANNA
WAYNE
ERIE
FOREST
ELK
CAMERON
MERCER
VENANGO
CLARION
JEFFERSON
CLEARFIELD
CENTRE
LYCOMING
SULLIVAN
WYOMING
LACKAWANNA
PIKE
LUZERNE
MONROE
CARBON
NORTHAMPTON
LAWRENCE
BUTLER
ARMSTRONG
INDIANA
BEAVER
ALLEGHENY
WASHINGTON
WESTMORELAND
CAMBRIA
BLAIR
HUNTINGDON
MIFFLIN
JUNIATA
PERRY
UNION
SNYDER
NORTHUMBERLAND
SCHUYLKILL
BERKS
DAUPHIN
LEBANON
LANCASTER
CUMBERLAND
YORK
ADAMS
FRANKLIN
FULTON
BEDFORD
SOMERSET
FAYETTE
GREENE